

**FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE IMPERIAL-MEXICALI 230-kV
TRANSMISSION LINES**

Volume 1: Main Text and Appendixes A–L

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COVER SHEET

RESPONSIBLE FEDERAL AGENCY: U.S. Department of Energy, Office of Fossil Energy

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TITLE: Final Environmental Impact Statement for the Imperial-Mexicali 230-kV Transmission Lines

LOCATION: Imperial County, California

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ABSTRACT: A U.S. Department of Energy (DOE) Presidential permit is required to construct, operate, maintain, and connect an electric transmission line across the U.S.-Mexico border. On February 27, 2001, Baja California Power, Inc., InterGen Aztec Energy, V.B.V. (hereafter referred to as Intergen), filed an application with DOE, Office of Fossil Energy, for a Presidential permit for a double-circuit, 230-kV transmission line extending from the Imperial Valley Substation in California for a distance of about 6 mi (10 km) to a point west of Calexico at the U.S.-Mexico border. The line would connect at the border with a similar line being built in Mexico. In a separate but similar proceeding, Sempra Energy Resources applied to DOE for a Presidential permit on March 7, 2001, for a 230-kV transmission line that would parallel the proposed Intergen line and connect with a similar line being built in Mexico. The lines for both projects would traverse land managed by the Bureau of Land Management (BLM), a cooperating agency in preparing this EIS. For both of these projects, the applicants propose to use the international lines to connect to separate power plants, each about 3 mi (5 km) south of the border and located approximately 10 mi (16 km) southwest of Mexicali, Baja California, Mexico.

Because these projects would be located in essentially the same place, DOE and BLM elected to consider both in the same EIS. DOE published its Notice of Intent on October 30, 2003 (68 FR 61797). DOE and BLM held public scoping meetings on November 20, 2003, in El Centro and Calexico, California. The Notice of Availability of the Draft EIS was issued on May 14, 2004 (69 FR 26817). DOE and BLM held public hearings on July 14, 2004, in El Centro and Calexico, California. DOE gave the public until July 30, 2004, to comment on the Draft EIS.

DOE and BLM have prepared this EIS to address the environmental impacts of the proposed actions and the range of reasonable alternatives, including the "No Action" alternative. DOE and BLM will use the EIS to ensure that they have the environmental information needed for informed decision making. The decisions will be issued in the form of Records of Decision by DOE and BLM no sooner than 30 days after publication of the Notice of Availability of this Final EIS.

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NOTATION

The following is a list of acronyms and abbreviations, chemical names, and units of measure used in this document. Some acronyms used only in tables may be defined only in those tables.

GENERAL ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern	
AEP	American Electric Power	
AERMAP	AERMOD Terrain Preprocessor	
AERMET	AERMOD Meteorological Preprocessor	
AERMOD	<u>AMS/EPA Regulatory MODel</u>	
AFS	Air Facility Subsystem	
AIRS	Aerometric Information Retrieval System	
ANL	Argonne National Laboratory	
AQI	air quality index	
ARB	California Air Resources Board	
ASFMRA	American Society of Farm Managers and Rural Appraisers	
ATSDR	Agency for Toxic Substances and Disease Registry	
BECC	Border Environment Cooperation Commission	
BLM	Bureau of Land Management	
BOD	biochemical oxygen demand	
BOR	U.S. Bureau of Reclamation	
CAA	Clean Air Act	
Cal/EPA	California Environmental Protection Agency	
Cal-ISO	California Independent System Operator	
CBTIS	El Centro de Bachillerato Tecnológico Industrial y de Servicios	
CDCA	California Desert Conservation Area	
CDFG	California Department of Fish and Game	
CDHS	California Department of Health Services	
CEC	California Energy Commission	
CEDD	California Employment Development Department	
CEQ	Council on Environmental Quality	
CESPM	Comisión Estatal de Servicios Públicos de Mexicali	
CFE	Comisión Federal de Electricidad	
CFR	<i>Code of Federal Regulations</i>	
CICA	Centro de Información sobre Contaminación de Aire	
COBACH	Colegio de Bachilleres	
COCEF	La Comisión de Cooperación Ecológica Fronteriza	
COD	chemical oxygen demand	
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board	

CRE	Comisión Reguladora de Energía
CWA	Clean Water Act
DHHS	U.S. Department of Health and Human Services, Public Health Service
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
EA	environmental assessment
EAX	Energía Azteca X, S. de R.L. de C.V.
EBC	Energía de Baja California
EIA	Energy Information Administration
EIR	environmental impact report
EIS	environmental impact statement
EKMA	Empirical Kinetic Modeling Approach
ELF	extremely low frequency
EMF	electric and magnetic fields
E.O.	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCR	field contact representative
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FR	<i>Federal Register</i>
GLC	ground level concentration
GMA	Geosynthetic Materials Association
HAP	hazardous air pollutant
HARP	Hot Spots Analysis and Reporting Program
HMMH	Harris Miller Miller & Hanson, Inc.
HRA	health risk assessment
IARC	International Agency for Research on Cancer
IBWC	International Boundary Water Commission, United States and Mexico
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
INE	Instituto Nacional de Ecología
ISCST3	Industrial Source Complex Short Term Dispersion Model 3
ITM	Instituto Tecnológico de Mexicali
IV	Imperial Valley

LGEEPA	Ley General de Equilibrio Ecológico y la Protección al Ambiente	
LRPC	La Rosita Power Complex	
MACT	maximum achievable control technology	
MCL	maximum contaminant level	
MIA	Manifestaciones de Impacto Ambiental	
MSL	mean sea level	
NAAQS	National Ambient Air Quality Standards	
NAEI	National Atmospheric Emissions Inventory	
NAFTA	North American Free Trade Agreement	
NEPA	National Environmental Policy Act	
NHPA	National Historic Preservation Act	
NIEHS	National Institute of Environmental Health Sciences	
NOAA	National Oceanic and Atmospheric Administration	
NOI	Notice of Intent	
NOM	Normas Oficiales Mexicanas	
NESHAPs	National Emission Standards for Hazardous Air Pollutants	
NPDES	National Pollutant Discharge Elimination System	
NRHP	<i>National Register of Historic Places</i>	
OEHHA	Office of Environmental Health Hazard Assessment	
OZIPR	<u>OZone Isopleth Plotting Program Revised</u>	
PAH	polycyclic aromatic hydrocarbons	
P.L.	Public Law	
PM	particulate matter	
PM _{2.5}	particulate matter with a mean aerodynamic diameter of 2.5 µm or less	
PM ₁₀	particulate matter with a mean aerodynamic diameter of 10 µm or less	
PROFEPA	Procuraduría Federal de Protección al Ambiente	
PSD	Prevention of Significant Deterioration	
QSA	Quantification Settlement Agreement	
RCRA	Resource Conservation and Recovery Act	
REL	reference exposure level	
ROD	Record of Decision	
ROG	reactive organic gas	
ROI	region of influence	
ROW	right-of-way	
SCEDC	Southern California Earthquake Data Center	
SCR	selective catalytic reduction (system)	
SDCWA	San Diego County Water Authority	
SDG&E	San Diego Gas & Electric	
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales	

SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SL	significant impact levels
SMCL	secondary maximum contaminant level
SWRCB	State Water Resources Control Board
TDM	Termoeléctrica de Mexicali
TDS	total dissolved solids
TMDL	total maximum daily load
TOG	total organic gas
TSI	trophic state index
TSS	total suspended solids
UABC	Universidad Autonomos de Baja California
USC	<i>United States Code</i>
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VMT	vehicle-mile(s) traveled
VOC	volatile organic compound(s)
VRM	visual resource management
WSA	Wilderness Study Area

CHEMICALS

CO	carbon monoxide
CO ₂	carbon dioxide
DO	dissolved oxygen
H ₂ S	hydrogen sulfide
HNO ₃	nitric acid
NH ₃	ammonia
NH ₄ NO ₃	ammonium nitrate
NO	nitrogen oxide
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
O ₃	ozone
Pb	lead

SO ₂	sulfur dioxide
TCE	tetrachloroethylene

UNITS OF MEASURE

ac-ft	acre-foot (feet)	L	liter(s)
bhp	brake horsepower	lb	pound(s)
°C	degree(s) Celsius	m	meter(s)
cm	centimeter(s)	m ²	square meter(s)
cm ³	cubic centimeter(s)	m ³	cubic meter(s)
d	day(s)	mg	milligram(s)
dB(A)	A-weighted decibel(s)	mG	milligauss
DNL	day/night weighted average noise level	mi	mile(s)
°F	degree(s) Fahrenheit	mi ²	square mile(s)
ft	foot (feet)	min	minute(s)
ft ²	square foot (feet)	MMBtu	million British thermal units
ft ³	cubic foot (feet)	mph	mile(s) per hour
g	gram(s)	MW	megawatt(s)
gal	gallon(s)	ppb	part(s) per billion
		ppm	part(s) per million
		ppmv	part(s) per million by volume
h	hour(s)	s	second(s)
ha	hectare(s)	t	metric ton(s)
Hz	hertz	yd	yard(s)
in.	inch(es)	yr	year(s)
K	degree(s) Kelvin	V	volt(s)
kg	kilogram(s)	W	watt(s)
km	kilometer(s)	µg	microgram(s)
km ²	square kilometer(s)	µm	micrometer(s)
kV	kilovolt(s)	µT	microtesla(s)

ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS

The following table lists the appropriate equivalents for English and metric units.

Multiply	By	To Obtain
<i>English/Metric Equivalents</i>		
acres	0.4047	hectares (ha)
cubic feet (ft^3)	0.02832	cubic meters (m^3)
cubic yards (yd^3)	0.7646	cubic meters (m^3)
degrees Fahrenheit ($^{\circ}\text{F}$) -32	0.5555	degrees Celsius ($^{\circ}\text{C}$)
feet (ft)	0.3048	meters (m)
gallons (gal)	3.785	liters (L)
gallons (gal)	0.003785	cubic meters (m^3)
inches (in.)	2.540	centimeters (cm)
miles (mi)	1.609	kilometers (km)
pounds (lb)	0.4536	kilograms (kg)
short tons (tons)	907.2	kilograms (kg)
short tons (tons)	0.9072	metric tons (t)
square feet (ft^2)	0.09290	square meters (m^2)
square yards (yd^2)	0.8361	square meters (m^2)
square miles (mi^2)	2.590	square kilometers (km^2)
yards (yd)	0.9144	meters (m)
<i>Metric/English Equivalents</i>		
centimeters (cm)	0.3937	inches (in.)
cubic meters (m^3)	35.31	cubic feet (ft^3)
cubic meters (m^3)	1.308	cubic yards (yd^3)
cubic meters (m^3)	264.2	gallons (gal)
degrees Celsius ($^{\circ}\text{C}$) +17.78	1.8	degrees Fahrenheit ($^{\circ}\text{F}$)
hectares (ha)	2.471	acres
kilograms (kg)	2.205	pounds (lb)
kilograms (kg)	0.001102	short tons (tons)
kilometers (km)	0.6214	miles (mi)
liters (L)	0.2642	gallons (gal)
meters (m)	3.281	feet (ft)
meters (m)	1.094	yards (yd)
metric tons (t)	1.102	short tons (tons)
square kilometers (km^2)	0.3861	square miles (mi^2)
square meters (m^2)	10.76	square feet (ft^2)
square meters (m^2)	1.196	square yards (yd^2)

|